


Aquaponics in Prince George's County



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Introduction

Collaboration with

- PALS
- County Planning Department
- UMD ENST

Two main issues

- Food insecurity
- Vacant buildings



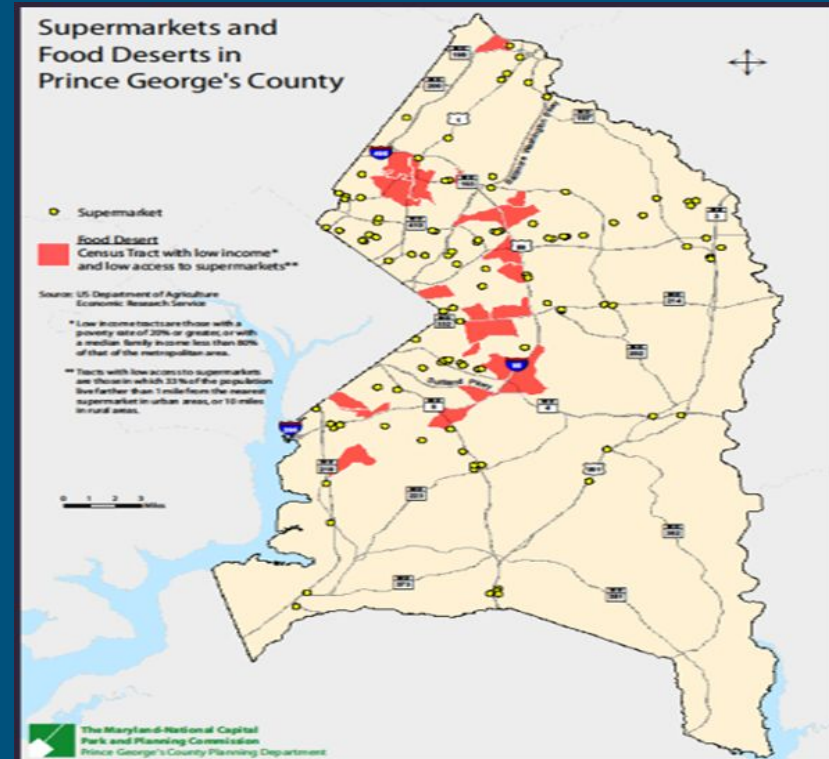
Food Insecurity in Prince George's' County

Availability, access, and utilization

14.3% of the county's children are food insecure

17% of the State's food insecure people live in Prince George's County

20 food deserts in the county as of 2015



Solution

Urban Agriculture

Aquaponics

A plan for the county to repurpose vacant buildings for sustainable food production



Interviews: Input from Stakeholders

County

Peter Shapiro

Kim Rush-Lynch

Fatimah Hasan

Park and Planning

Ted Kowaluk

Aquaponic

Kevin Doyle

John Settles

Global Aquaponic
Systems

Aquaponic Source

What is Aquaponics?

Aquaculture and hydroponics

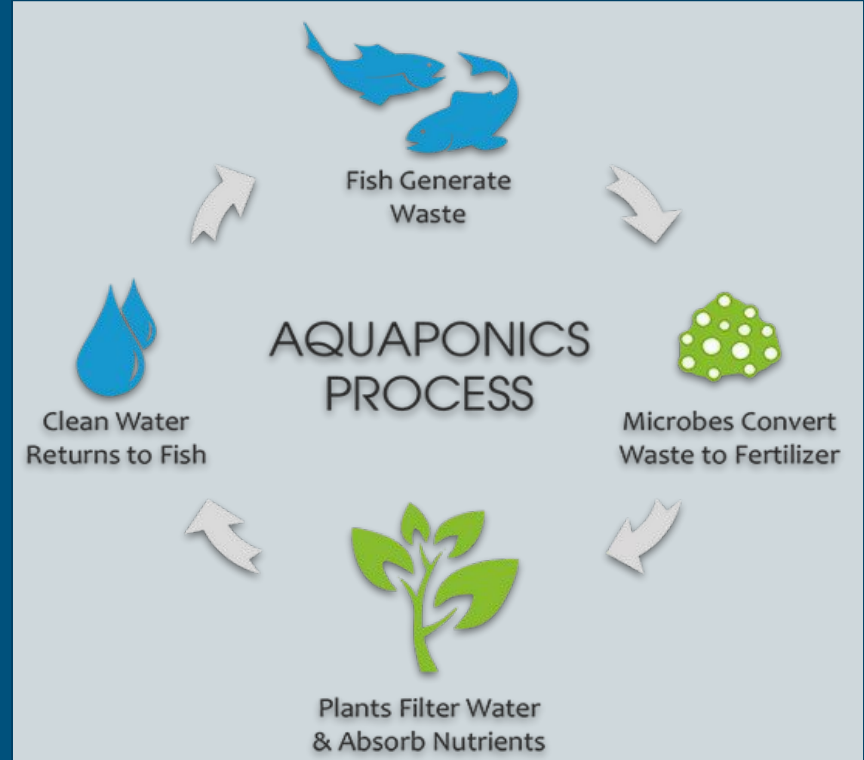
Mimics natural cycles

Plants fertilized by fish waste

Low water demand—closed loop system

No need for chemical fertilizers/pesticides

Ability to grow variety of crops



Site Criteria

Vacant building in the County

Large, level area

Near transportation networks: Metro, bus, Beltway

Utilities—water, electric, HVAC

Reduces retrofitting costs

Large parking lot

Adjacent to residential area



Project Description

Building Description

- 4701 Silver Hill Rd, Hillcrest Heights
- previously a Rite Aid drug store
- main level: 11,600 sq ft
- basement: 7,800 sq ft

Vacant and owned by the county

Accessible by public transportation



System Design

The Aquaponics Source premade system:

Eight 8' x 80' deep water culture troughs

- 5,120 sq ft of production space

Four raised media beds 9 square feet each

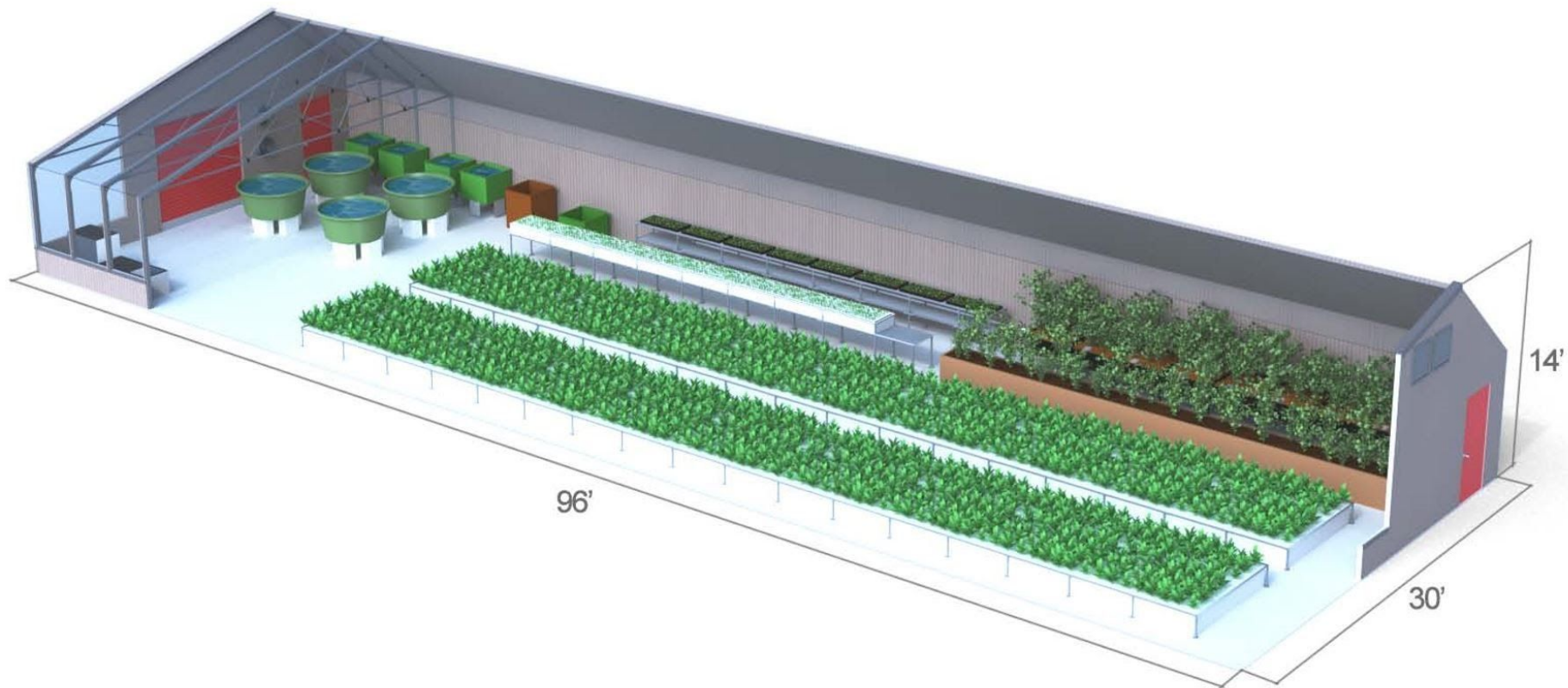
- 288 sq ft for production of fruiting crops

Two vertical nursery systems

16 fish tanks with 8,000 gallon capacity

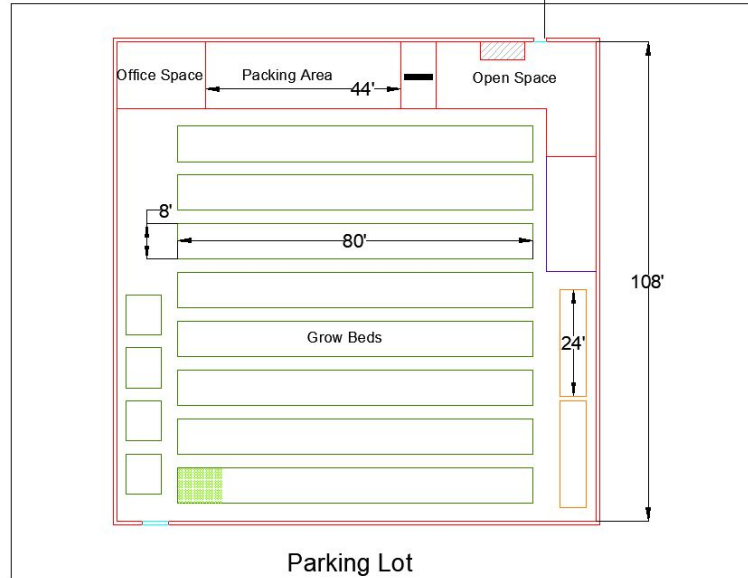
- one gravity filtration system per four tanks





System Design

Case Study Floor Plan - First Floor



UMD/PALS Aquaponics Site

The UMD/PALS Aquaponics Site is located at 4701 Silver Hill Rd, Hillcrest Heights, MD. It will consist of two floors with the main floor having:

- Four double trough deep water grow beds
- Four raised media beds
- Two nurseries
- Refrigerator and packing space
- Office Space

The basement will consist of:

- Sixteen 500 gallon fish tanks
- Four filtration systems

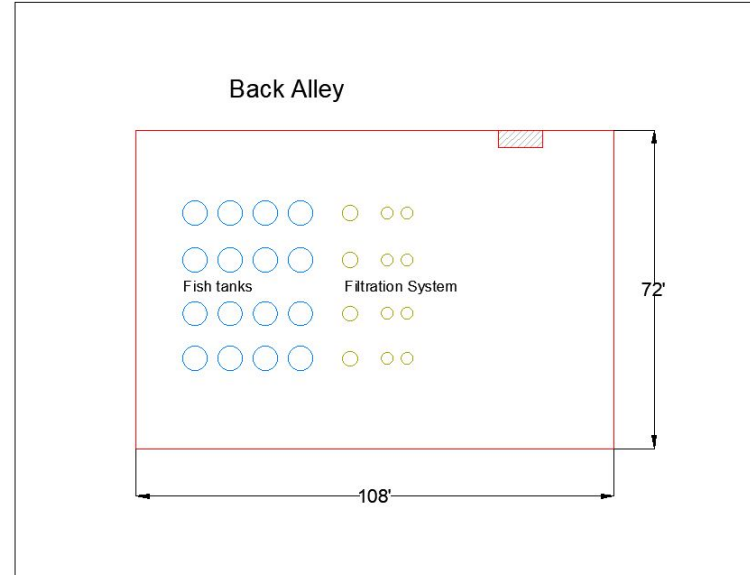
Room	Area	Volume
Office Space	8' x 44' = 352 sq ft	
Packing Area	44' x 24' = 1056 sq ft	
Open Space	24' x 24' = 576 sq ft	
Grow Beds	80' x 24' = 1920 sq ft	
Parking Lot	108' x 80' = 8640 sq ft	

UMD/PALS Aquaponics Site

1/1/2020

As of 10:00

Case Study Floor Plan - Basement



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Project Description- Budget

Component	One-time Expense	Yearly Expense
Building retrofit	\$100,000	X
System (including lights)	\$240,675	X
Operations	\$8,100	\$121,293
Education	\$2,500	\$10,000
Totals	\$417,155	\$133,075
First Year Total		\$549,055

Labor

Included in Operations Budget:

- two full time
- two part time
- one manager



Possible Funding Mechanisms

Grants

- EPA Sustainability Research Grants (\$4 billion distributed among all grants)
- USDA Sustainable Agriculture grant (up to \$250,000)
- Maryland Sea Grant (up to \$70,000)
- UMD Sustainability Fund Grant (up to \$330,000)

Small business loan

County funding/support

Production Potential

Perch

2,285 lbs/year

Catfish

2,000 lbs/year

Lettuce

11,200 heads/week

160,000 heads/yr

Tomatoes

2,880 lbs/season

Revenue Potential - Option 1

Crop	Price/lbs	Annual Production	Total Space	Total
Lettuce	\$1.85	37 heads per ft ²	5120 ft ²	\$350,464.00
Tomato	\$1.58	10 lbs per ft ²	288 ft ²	\$4,550.40
Perch	\$5.50	2,285 lbs	8,000 gallons	\$12,567.50

Total Revenue: **\$367,581.90**

Annual Net Revenue: **\$234,506.70**

Revenue Potential - Option 2

Total Revenue: \$250,673.10 Annual Net Revenue: \$117,597.90

Crop	Price/lbs	Annual Production	Total Space	Total
Lettuce	\$1.85	37 heads per ft ²	2560 ft ²	\$175,232.00
Basil	\$6.50	5lbs per ft ²	1280 ft ²	\$41,600.00
Swiss Chard	\$3.00	5lbs per ft ²	1280 ft ²	\$19,200.00
Bell Pepper	\$1.44	5lbs per ft ²	288 ft ²	\$2,073.60
Perch	\$5.50	2,285lbs	8,000 gallons	\$12,567.50

Project Impacts

Financial

Property values

Jobs

Social

Food insecurity

Build community

Healthy eating

Environmental

Minimal waste

Site revitalization

The Case for Growing Food Now

Food pantries running out of food

Food shortages due to the pandemic

Washington post article (12/14/20) -
https://www.washingtonpost.com/local/growing-threat-of-hunger-in-a-wealthy-region-is-blunt-example-of-economic-inequality/2020/12/13/614140c4-3bfd-11eb-9276-ae0ca72729be_story.html

Growing threat of hunger in a wealthy region is blunt example of economic inequality



People wait in line at a food distribution site in D.C. on Dec. 9. (Michael Reynolds/EPA-EFE/Shutterstock)



By Robert McCartney
Reporter

Dec. 14, 2020 at 5:00 a.m. EST

A steady stream of cars turned into the Gaithersburg Middle School parking lot Thursday afternoon, each to pick up two cardboard boxes of free groceries to keep a household from going hungry.

Many of the clients only began coming this year, when the combination of the pandemic and the recession forced them to rely on charity from the Manna Food Center.



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supports
updated
internet
regulation

[Read more](#)

FACE
BOOK

Source: McCartney, R. (2020). Growing threat of hunger in wealthy regions is blunt example of economic inequality. *The Washington Post*

Future Steps

Education

K-12 programs

Internships

Partnerships

Restaurants

Community Supported
Agriculture

Amenitize

Coffee shop

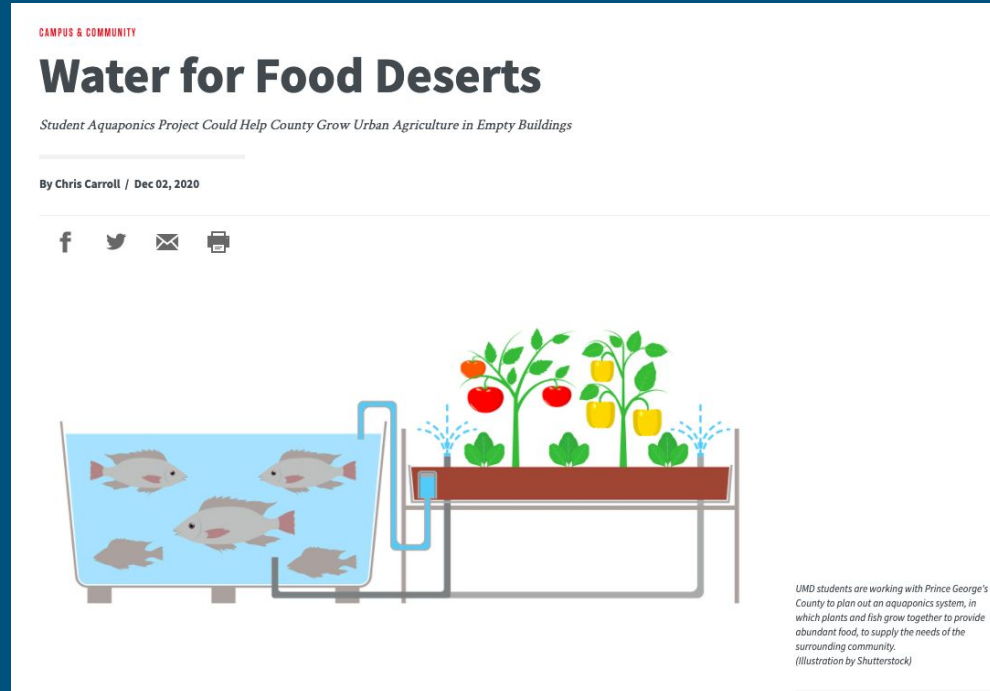
Co-op

Farmers Market

Article from *Maryland Today*

from the University's
Office of Strategic Communication

<https://today.umd.edu/articles/water-food-deserts-54f075e8-28a1-4629-998e-72f2e2f4ee7b>



Questions?

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